Appendix 3 - Lynx habitat as quantified in the literature

Alberta (50 mi^2 or 130 km^2)
Brand et al. (1976)

Densities of 2 - 3 lynx/100 km2 were reported from a study area described as: "33 percent improved pasture and cropland; 33 percent aspen and poplar forest; 15 percent spruce bog; 8 percent bog with scattered black spruce, tamarack, bog birch, and willow; 7 percent brush and regenerating (post-fire) aspen, poplar, and willow; 2 percent marsh with cattail and bulrush; and 2 percent open water." (Snow tracking study)

Cape Breton Island, Nova Scotia (21.3 mi^2 or <58 km^2)
Parker et al. (1981)

"Optimum lynx habitat on the highlands of Cape Breton Island (Nova Scotia) was represented by a mosaic of approximately 50 percent mature conifer, 30 percent mature mixed, 12 percent successional (~20 years following cutting), and approximately 8 percent peat bogs, alder swales, and small streams and ponds. We suggest that the amount of successional habitat could have been increased to 20-25 percent at the expense of the mature mixed type." The authors don't give percent of open habitat, but from a table in the article, home ranges never had more than 15 percent recent (≥ 4 yr old clearcuts). 3 lynx collared, references to previous snow tracking results.

Ontario (39,376 mi^2 or 107,000 km^2)
Quinn and Thompson (1987)

Between "Boreal Mixed Wood" (27 percent of forest in early successional stages, with 160 ha average clearcut size) and "True Boreal" forests (17 percent early successional, 560 ha avg. size), there were no differences in productivity of lynx or trapping mortality, but the authors speculated that the carrying capacity of Boreal Mixed Wood (southern) forests may have been relatively higher.

Kenai Peninsula, Alaska (92 mi^2 or 250 km^2)
Kesterson (1988)

The study area contained: 34.3 percent mature spruce-hardwood forest (80+ yrs.), 61.4 percent midsuccessional forest burned in 1947 (38-40 yrs.), and 4.3 percent early successional forests (8-11 yrs.). Remnant stands of mature forest occurred throughout the 1947 burn (~13 acres), and mature and midsuccessional stands occurred within the early successional areas. "Over 87 percent of the relocations occurred within the midsuccessional 1947 burn, which occupied 61.4 percent of the study area. Twenty-four

of 101 relocations in mature forest occurred around female den sites... lynx significantly selected midsuccessional forest within the study area and neglected habitats consisting of large expanses of crushed or mature forest." Twenty nine lynx were captured.

Washington (448 mi^2 or 1,161 km^2)
Brittell et al. (1989)

Habitat categories within lynx home ranges were not significantly different from those available in the study area however "lynx avoid xeric south and west aspects presumably due to the little cover and prey." Smaller lynx home ranges were positively correlated with regenerating forests, mid-elevations, and moderate to low slopes. The study area and mean lynx home ranges contained: 59-65 percent forested stands with high canopy closure (>66 percent closed), 20-22 percent forested with medium canopy closure (33-66 percent closed), and 14-21 percent non-forest. Twenty five lynx captured, snow tracking indicated others present.

Washington (693 mi^2 or 1,795 km^2)
Koehler (1990a)

Lynx "used lodgepole pine and Engelmann spruce/subalpine fir forest cover types in greater proportion than expected and xeric lowland types less than expected." Lowland grassland and ponderosa pine (1.7 percent mean lynx, 0.3-3.0 percent range, 15.2 percent study area), Douglas fir/western larch/quaking aspen (12.8 percent, 7.8-17.2 percent, 27.5 percent), Engelmann spruce/subalpine fir (25 percent, 15.8-33.8 percent, 20.6 percent), lodgepole pine (57.3 percent, 46.7-65.8 percent, 31.8 percent), and alpine meadow (3.2 percent, 1.3-5.9 percent, 5 percent). Lodgepole pine >44yr. covered >80 percent of the study area; lodgepole <21years covered <11 percent, mainly in 2.5 acre (1ha) plots resulting from lightning and windthrow. Seven lynx were radio collared, two kittens were ear-tagged, and 19 lynx (including four kittens) were known to occupy 247mi^2 (640 km^2) of the study area (6.7 adult lynx/100mi^2, 2.6 adults/100 km^2).

Kenai Peninsula, Alaska
Bailey (1992)

"In general, habitat practices that increase food/cover for hares will benefit lynx and large blocks of good hare/lynx habitat will be better than smaller, separated blocks of good hare/lynx habitat. Your mixture of habitat types for lynx appear reasonable except perhaps for non-foraging or travel habitat. Because lynx are opportunistic, they will take prey anywhere it occurs. Areas of high and low density prey densities better describe lynx habitat in our area, but perhaps good lynx habitat in your area is separated by mountain valleys and developed areas... Our non-lynx habitat only includes lakes and open bogs and roughly approximates about 30 percent of lynx habitat and home ranges... In mountainous/benchland habitat, conditions appear more like a climax community where hare/lynx numbers are lower but fluctuate less than lowland successional boreal forest. These habitats appear more dependent on hares using alders and willow communities situated in small drainages and slopes/ridges and interspersed with conifers at/near timberline."

Kluane, southwestern Yukon (68 mi^2 or 175 km^2)
Murray et al. (1994)

The study area contained: 36 percent open spruce, 25 percent very open spruce, 16 percent closed spruce, 2 percent very closed spruce, 10 percent shrub, 6 percent deciduous, 5 percent open. Lynx avoided shrub and open habitats during all years, selected very closed spruce during low density lynx years (although use always low <11 percent). Open spruce was most heavily used in all years (35-43 percent). 10-50 lynx in the larger Kluane Project area (135mi2 or 350km2).

Mackenzie Bison Sanctuary, Northwest Territories (112 mi^2 or 290 km^2)
Poole et al. (1996)

Landscapes and home ranges used by lynx had high proportions of dense coniferous and dense deciduous forests. Other habitat classes, including open black spruce forests and wetland-lake bed complexes, had lower selection indices. "Much of the dense coniferrous habitat resulted from 20-60 year old burns where young conifer and deadfall from fire-killed trees combined to produce dense understory vegetation." Preferred habitat types made up at least 50 percent of the study area. At least 19 percent of the study area was shrub, meadow, or water. Another 12 percent was unclassified. Lynx relocation areas had means of 21-22 percent unforested habitat types, and mean percent unforested habitat in lynx home ranges was 29-28 percent. Twenty seven lynx were radio-collared.

Teslin Plateau, Southern Yukon (128 mi^2 or 304 km^2)
Mowat and Slough (2003)

Wildfire burned more than 70 percent of the study area 30-35 years prior the study resulting in 9.8 percent mature spruce/pine (80-year old), 10.8 percent alpine fir, 5.2 percent riparian willow and 74.2 percent immature forest. "Lynx showed strong preference for regenerating habitats (86 percent of the locations) over mature white spruce and alpine-subalpine". Over 100 lynx were captured.